

CENTENARIES

By S. R. Ranganathan, M.A., L.T., F.L.A.

*(University Librarian, Madras)***Dulong, Pierre-Louis (1785-1838.)**

PIERRE-LOUIS DULONG, a celebrated French scientist, was born at Roven, February 12, 1785. Having had his early education at the Polytechnic School, he applied himself to the study of medicine. At the close of his educational career, he practised for some time as a surgeon in one of the poorest quarters of Paris. As he not only treated the poor free of charge, but also bought medicine for them, he found his vocation too expensive. Attracted by the brilliant researches of Sir Humphrey Davy, Dulong decided to devote himself to Chemistry. He was fortunate to get appointed as a pupil-assistant in Berthollet's Laboratory.

CONTRIBUTIONS TO CHEMISTRY

His progress was such that in a few years he made a variety of important discoveries. While working with the chloride of nitrogen (discovered by him), his first knowledge of its nature was obtained from a frightful explosion, which destroyed almost all his apparatus and deprived him of the use of an eye and two fingers. This unfortunate accident did not however abate his ardour for research. In 1815 he demonstrated the true nature of nitrous acid and later he extended the number of acids formed by phosphorus from two to four.

CONTRIBUTIONS TO PHYSICS

Dulong is perhaps best known for his contributions to Physics,—particularly for the important generalisation on the heat capacity of an element, which has immortalised his name with that of his co-worker, Petit. In 1819 Dulong and Petit, following the technique of Black in measuring specific heats of the various elements, came upon the important generalisation that the product of atomic weight (in grams) and the specific heat of an element is a constant (nearly 6). Dulong had also done some work relating to Newton's Law of Cooling and the comparison of different kinds of thermometers. His memoir (1818) on the law of cooling received the approbation of the Academy of Sciences. He also took an important part in the researches made by order of government on the elastic force of steam at high

temperatures and verified the law of Mariotte up to twenty-seven atmospheres.

THE HANDICAPS OF HIS TIMES

During Dulong's time, France was a great centre for experimental research. And yet, in the words of Welch, France was long in supplying her scientific men with adequate laboratory facilities. Barnard, that prince of experimenters, worked in a damp, small cellar, one of those wretched Parisian substitutes for a laboratory which he has called "the tomb of scientific investigators". But in spite of this, French scientists investigated and taught with enthusiasm. Dulong himself expended nearly all his wealth on apparatus.

Dulong published twenty-three papers including eight joint ones. He died at Paris, July 19, 1838.

Zeppelin, Ferdinand (1838-1917)

COUNT ZEPPELIN, German airship investigator, was born at Constance in Baden, July 8, 1838. He received a commission in the army in 1858. While on duty as observer in 1863 during the American Civil War, he made his first ascent in a balloon. From that time, the idea of aerial navigation was continuous with him. He retired from the army in 1891 and devoted himself entirely to the realisation of his one idea.

RIGID AIRSHIP

In 1889 Count Zeppelin had submitted a memo to the King of Wurtemberg containing the details of an airship. Governmental support did not however materialise. In 1898 Count Zeppelin organised a joint-stock company called the Aetiengesellschaft Zur Forderung der Motor-luft-schiffahrt, which had for its objects "to experiment with, construct and navigate lighter-than-air craft". The company started with a paid-up capital of the value of about ten lakhs of rupees.

THE FIRST ZEPPELIN

The first Zeppelin was sent on its first trial July 2, 1900, and attained a speed of $8\frac{1}{2}$ miles. It contained 24 longitudinal aluminium girders and 16 transverse frames.

It carried 16 gas cells with a total capacity of 338,410 cubic feet. Two 16-horsepower gasoline motors were used to drive the craft. The success of this airship resulted in a marked change in the public and official attitude.

LATER PROGRESS

LZ-2 which was 414 ft. was set afloat November 30, 1905. LZ-3 was completed in 1907. The King of Wurtemberg now co-operated handsomely with him. LZ-4 had motors of 110-horsepower and attained a speed of 29 miles. During the summer of 1909, Count Zeppelin thought of the possibility of an expedition to the North Pole, but he did not pursue this idea.

ZEPPELIN PASSENGER SERVICE

In 1910 Count Zeppelin founded the Delag (Deutsche Luftschiffert Actiengesellschaft) as the first regularly organised commercial aerial transport company. The maiden flight was made June 22, 1910 in LZ-7, christened "Deutschland" and was piloted by the Count himself throughout its route of 300 miles. The ship was elaborately fitted with cabin and restaurant facilities. During the first three years, the Delag Company carried 34,228 passengers. The number of flights was 1,587 and the number of hours of flight was 3,167. Up to 1913 Count Zeppelin had built a total of twenty-six airships, one half of which had been destroyed by one accident or another, yet amazingly without one fatality.

WAR PERIOD

The outbreak of the World War in 1914 brought about a most intensive construction of Zeppelins in Germany and elsewhere. Although they were much abused, they were invaluable as scouts for the navy.

Count Zeppelin lived to see some ninety Zeppelins constructed and put to service. He died at Charletonburg, March 18, 1917.

Allen, Joel Asaph (1838-1921)

J. A. ALLEN, an American ornithologist, was born in his father's farm not far from Springfield, Mass., July 19, 1838. Only during the winter session could he be spared from farm work to attend the nearest school, a mile distant. At the age of fourteen he made his first collection of birds, which he described, attempted to draw and colour and even named totally in ignorance of the existence of published works. A little later a new world opened to him in the discovery

of the volumes of Wilson, Nuttall and others, which led to his ambition, at the age of twenty, to write a history of the "Birds of New England". In 1861, he reluctantly sold his natural history collection in order to find money to go to Harvard University to study under the famous professor, Louis Agassiz. In 1865, he gained his first experience of field-work by accompanying his professor in his expedition to Brazil.

HIS CAREER

He was soon elected as curator of birds in the Harvard Museum of Comparative Zoology. While in this post (1867-85) he showed unprecedented capacity as a collector. With health impaired by long exposure in collecting expeditions, he devoted his time wholly to writing from 1876 to 1882. The result was *The American bisons, living and extinct* and *History of North American pinnipeds*. In 1885, he was appointed head of the department of birds and mammals of the American Museum of Natural History. This post he held till a few months before his death.

HIS CONTRIBUTIONS

During this period, several of the most talented naturalists of America came to work under him. Under his editorship, 37 volumes of the *Bulletin* and 22 volumes of the *Memoirs* of the Museum were issued. The number of his own papers reached 198 before 1900 and a few more were published in the present century. His first paper is dated 1864. It appeared in V. 4 of the *Communications* read before the Essex Institute, Salem. It was entitled *Catalogue of the birds found at Springfield, Mass., with notes on their migrations, habits, etc., together with a list of those birds found in the State not yet observed at Springfield*.

HIS HONOURS

Honours from American and foreign Societies came thick and fast. Humbard Scholarship from Harvard, the degree of Ph.D. from the University of Indiana, the Walker Grand Prize from the Boston Society of Natural History and the Linnean Society Medal from London were the chief among them.

His enthusiasm for research led him constantly to over-tax his physical resources; yet in spite of a frail body he was actively engaged in writing and research till within a few weeks of his death.

Allen died August 29, 1921.